

## Assessment of anxiety in patients before and after amniocentesis procedure

Anxiety during pregnancy

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### Abstract

**Aim:** During pregnancy, anxiety can occur with various severity and different symptoms. Anxiety may occur due to pregnancy and neonatal problems. In this study, we aimed to determine the presence and level of anxiety before and after the procedure in patients who would undergo amniocentesis due to various indications. **Material and Method:** Our study planned prospectively. The study included 148 patients who underwent amniocentesis at the antenatal service of our hospital between May 1, 2018, and September 30, 2018, for various indications and accepted to participate in this study. BECK-A anxiety scale was applied to the patients who underwent amniocentesis before and after the procedure. After the patients responded to 21 questions in the scale, BECK-A score was obtained for each patient. **Results:** An increased risk for trisomy 21 in triple testing is the most common indication for amniocentesis and constitutes 45.3% of all amniocentesis procedures. Presence of fetal anomaly in ultrasonography is the second most common cause and it constitutes 19.6% of all cases. In our study, in 58.1% of the patients, the anxiety level did not change due to the procedure. It also was found that 37.8% of the patients had decreased anxiety and 4.1% had increased anxiety level. **Discussion:** Considering the negative effects of anxiety during the pregnancy, the patients should be well informed to reduce anxiety and consult with a relevant specialist for support if necessary.

### Keywords

Amniocentesis; Anxiety; Pregnancy

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Introduction

During pregnancy, anxiety can occur with various severity and different symptoms. Anxiety may occur due to pregnancy and neonatal problems. Abortions, fetal anomaly detection, fetal aneuploidy, delivery, and postpartum complications may cause maternal anxiety [1-4].

Amniocentesis in pregnancy can be performed from 16th week onwards and is used for biochemical, microbiological and chromosomal tests, especially for aneuploidy detection. In the case of risk assessment in noninvasive diagnostic tests performed on patients, the amniocentesis procedure that must be performed for a definite diagnosis is an invasive procedure and leads to various degrees of anxiety. Main causes of this anxiety can be summarized as the risk for the baby of being damaged by the procedure, the tension caused by the thought of giving birth to a disabled baby, the risk of maternal death and the pain that the process itself will cause [5,6]. A low level of anxiety does not affect the daily life of the patient, whereas serious anxiety will decrease the quality of life [7-9].

It has been shown in the literature that maternal anxiety during pregnancy has an effect on both mother and fetus. Maternal anxiety can lead to premature birth, low birth weight, fetal or neonatal developmental disorders [1,10].

There are studies indicating that non-acute chronic stress affects the release of corticotropin-releasing hormone and urocortin in amniotic fluid and this leads to changes in fetal growth [11].

It is important for the specialist to perform amniocentesis procedure safely and without complications. However, before and after the procedure, severe anxiety in the patient should be evaluated with a psychiatric consultation and treated if necessary.

Although there are studies evaluating the anxiety state of patients with pain before and after amniocentesis in the literature, there is no study evaluating the anxiety itself after the procedure [12,13]. In this study, we aimed to determine the presence and level of anxiety before and after the procedure in patients who would undergo amniocentesis due to various indications.

Material and Method

Our study planned prospectively. Approval was obtained from the Ethics Committee of Bursa Yüksek İhtisas Training and Research Hospital, Sağlık Bilimleri University (2011-KAEK-25 2018/04-01). The study included 148 patients who underwent amniocentesis at the antenatal service of our hospital between May 1, 2018, and September 30, 2018, for various indications and accepted to participate in the study. Demographic information such as age, gravida, parity, and abortion of the patients and the gestational week during the procedure were obtained from all patients. Indications for amniocentesis are determined as follows: maternal age, trisomy 21, trisomy 13, and trisomy 18 risk higher than 1/250 in triple test, presence of anomaly in fetal ultrasonography, Toxoplasma IgM positivity in maternal serum, and other causes (parental desire, family history of genetic disease, Down syndrome in the previous pregnancy). BECK-A anxiety scale was applied to the patients who underwent amniocentesis before and after the procedure. After the patients responded to 21 questions in the scale, BECK-A score

was obtained for each patient. The range of 8-15 scores was evaluated as mild anxiety, 16-25 as intermediate anxiety, and 26-63 as severe anxiety and the patients were divided into 3 groups. Scores of the patients before and after amniocentesis were compared with each other. Amniocentesis was performed using a 20 gauge needle with the help of an abdominal ultrasound probe. Fetuses who were evacuated after amniocentesis were also evaluated and the number and rate of medical evacuation were calculated.

Statistical analysis of the data was performed with SPSS software version 19.0 (Statistical Program for Social Sciences, Chicago, IL, USA). Mean +/- standard deviation values were used in descriptive statistics of the data. In addition, the minimum and maximum values for the data were calculated. Distribution of the variables was checked by the Kolmogorov-Smirnov test. In the comparison of the groups, Student's t-test was used when the data show normal distribution, whereas Mann-Whitney U test was used when the data were not normally distributed. Chi-Square test was used for categorical data.

Results

Demographic data of the patients are shown in Table 1. The mean age of the patients was 31,99 ± 6,69. The mean gestational week of amniocentesis was 17.82 ± 2.34.

Indications for amniocentesis are shown in Table 2. Increased risk for trisomy 21 in triple testing is the most common indication for amniocentesis and constitutes 45.3% of all amniocentesis procedures. The presence of a fetal anomaly in ultrasonography is the second most common cause and it constitutes 19.6% of all cases. Ratios are shown in Figure 1.

Table 3 shows the post-treatment change rates of anxiety. In our study, we found that in 58.1% of the patients the anxiety level did not change due to the procedure. We also found that 37.8% of patients had decreased anxiety and 4.1% had increased anxiety. Ratios are shown in Figure 2.

Table 4 shows the proportion of patients who underwent medical evacuation. Thirty of these patients (20.3%) accepted the procedure and medical evacuation was performed.

Table 1. Demographic characteristics of patients

	N	Minimum	Maximum	Mean	Standart Deviation
Age	148	17	53	31,99	6,69
Gravidas	148	1	11	2,93	1,77
Parity	148	0	6	1,47	1,29
Abortion	148	0	6	0,46	0,96
The week of amniocentesis	148	15	25	17,82	2,34

Table 2. Indications for amniocentesis

	N	Percentage(%)
Age	10	6,8
Increased Trisomy 21 risk in Triple test	67	45,3
Increased Trisomy 13 and 18 risks in Triple test	19	12,8
Presence of fetal anomaly in USG	29	19,6
Toxoplasma IgM positivity	16	10,8
Others	7	4,7
Total	148	100,0

Table 3. The anxiety rate of the patients according to the Beck-A anxiety scale

	N	Percentage(%)
Decreased anxiety	56	37,8
Unchanged anxiety	86	58,1
Increased Anxiety	6	4,1
Total	148	100,0

Table 4. Medical evacuation status

	N	Percentage(%)
Evacuated	30	20,3
Not evacuated	118	79,7
Total	148	100,0

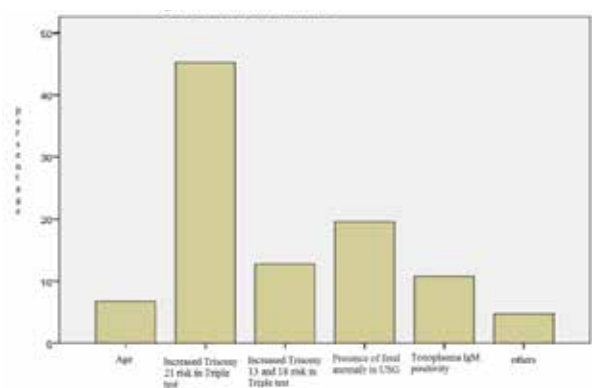


Figure 1. Indications for amniocentesis

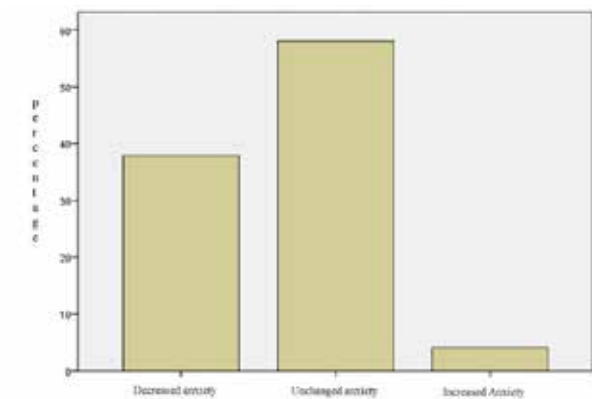


Figure 2. The anxiety rate of the patients according to the Beck-A anxiety scale.

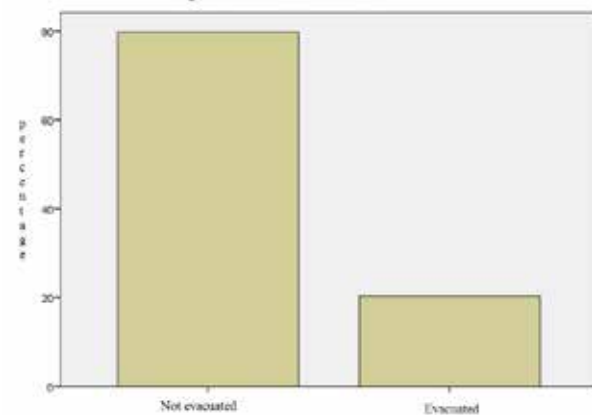


Figure 3. Medical evacuation status.

Discussion

In our study, the anxiety level was determined before and after amniocentesis procedure and anxiety was observed in more than half of the patients (58.1%). In 4.1% of the patients, anxiety increased after the procedure. Studies have shown that amniocentesis (AS) and chorionic villus sampling (CVS) procedures cause anxiety in patients. Ratio of CVS to AS is known to cause more anxiety [12-15]. Not only the pain of the procedure but also the situations that may occur in the pregnancy and after the birth play a role in the patient’s anxiety [15]. In a study performed by Balci et al., maternal pain and anxiety were evaluated before amniocentesis, during amniocentesis, and after amniocentesis. In the study, 240 patients were evaluated and less pain and anxiety were reported in patients who have received appropriate counseling before the procedure. In addition, they recommended that all patients undergoing amniocentesis should be properly informed about the procedure itself and the complications that may occur after the procedure [16]. In our study, it was observed that the anxiety states of the patients did not change before and after the amniocentesis. Probably the realization of the procedure reduces the anxiety caused by amniocentesis itself, while other reasons (problems that may occur during the pregnancy and postpartum period) may cause anxiety to continue or increase. In a study conducted by Dadhwal et al., the relationship between anxiety and pain status and clinical findings of patients who underwent AS and CVS were evaluated. In the study, 92 patients underwent AS, 78 patients underwent CVS and pain and anxiety were evaluated by visual analog scale. Pain that was predicted before the amniocentesis was found to be higher than the pain during the procedure and the difference was found to be statistically significant (p: 0.001). After amniocentesis procedure, anxiety was found to be significantly lower than anxiety before the procedure (p: 0.001). In our study, we found that 37.8% of patients had decreased anxiety after the amniocentesis. In only 4.1%, we found that anxiety increased before the procedure. In a study by Bot-Robin et al., maternal anxiety and pain were evaluated during prenatal diagnosis procedures. In this study, a total of 254 patients (67 CVS and 187 AS) were evaluated. Pain and anxiety before and after AS and/or CVS were evaluated with Numerical Stress Scale (NSS) and Numeric Pain Scale (NPS). As a result of the study, it was determined that CVS and AS procedures could cause anxiety in patients and this situation was more seen in CVS. In their study, it was stated that anxiety and pain were significantly related to each other. In addition, it is pointed out that it may be beneficial for specialists who will make CVS or AS to know the factors that cause anxiety [14]. In our study, we believe that the patient’s anxiety may continue after AS application and this may affect the quality of life of the patient in the rest of the pregnancy. In a study by Klages et al., maternal anxiety and the factors that increased the level of pain were investigated in patients who underwent AS and CVS. The results of the study showed that if the patient had more anxiety, the pain felt during the procedure increased. In addition, it was determined that the level of anxiety was decreased in case of good counseling and informing before the procedure [17]. In a study by Mousavi et al., the relationship between maternal

anxiety level and alpha-fetoprotein (AFP), human chorionic gonadotropin (HCG), inhibin-A and non-conjugated estriol (UE3) was investigated. Low AFP and Inhibin-A levels and elevated UE3 levels were associated with high maternal anxiety. However, it was stated that maternal anxiety did not affect amniocentesis results [18].

In a study conducted by Muller et al., it has been reported that anxiety may develop in patients who are planned to undergo the invasive prenatal test. The verbal, written or visual presentation of the information about the test was evaluated for the effect on anxiety. In their study, it was reported that visual information is more educative but may cause more stress in patients with a tendency to anxiety [19].

In a study by Sanhal et al., it was aimed to determine the levels of anxiety and depression before the procedure in patients who underwent AS and CVS. In their study, anxiety and depression scores of the patients who had CVS in the first trimester and AS in the second trimester were higher than the control group. When AS and CVS subgroups were compared, anxiety scores were similar and depression scores were higher in the CVS group [1]. In our study, we found that anxiety continued after amniocentesis but the level of anxiety did not change.

In conclusion, it should be considered that anxiety may develop in patients who will undergo the invasive prenatal test and this anxiety may continue after the procedure. Considering the negative effects of anxiety during the pregnancy, the patients should be well informed to reduce anxiety and consult with a relevant specialist for support if necessary.

### Scientific Responsibility Statement

*The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.*

### Animal and human rights statement

*All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.*

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### Conflict of interest

*None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.*

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